

# Extra-corporeal Dual Stage Blood Processing Method and Apparatus

## Abstract

Methods and apparatus particularly involving the separation of blood into blood components and the collection of such components are disclosed. In one aspect, an extra-corporeal method for the collection of plasma and red blood cells is provided, wherein the collection of plasma and red blood cells may occur simultaneously or subsequently utilizing the same dual stage blood processing vessel. The flow of blood to the blood processing vessel and return of uncollected blood components may be provided via a single needle, wherein blood is removed from and returned to a donor/patient during alternating blood removal and blood return submodes. Platelet separation and collection options are also described. In either case, prior to red blood cell collection, a set-up phase may be carried out to set a predetermined hematocrit and AC ratio. Replacement fluid delivery may optionally also be provided either substantially continuously during any collection phase(s) and/or in a bolus mode.